We claim:

1. A set of marker genes comprising two or more genes identified in Table 1 as differentially expressed in primary tumors of recurring breast cancer patients exhibiting a outcome to anti-estrogen therapy, with a significance of $p \leq 0.05$.

2. The set of marker genes of claim 1, comprising two or more genes of the 81-gene signature listed in Table 1.

3. The set of marker genes of claim 1, comprising two or more genes of the 44-gene signature listed in Table 1.

4. The set of marker genes of claim 1, comprising one or more genes selected from FN-1, CASP-2, THRAP-2, SIAH-2, DEME-6, TNC, and COX-6C.

5. The set of marker genes of claim 1, comprising one or more of TNC, SIAH-2, DEME-6, and COX-6C.

6. The set of marker genes of claim 1, comprising one or more of FN-1, CASP-2, THRAP-2, SIAH-2, and DEME-6.

7. The set of marker genes of claim 1, comprising one or more of DEME-6 and CASP2, and one or more of SIAH-2 and TNC.

8. The set of marker genes of claim 1, comprising the 44-gene signature listed in Table 1.

9. A nucleic acid probe comprising a marker gene as defined in any of claims 1-7, or a complementary polynucleotide thereof, or a fragment thereof comprising at least 10-50 contiguous nucleic acids.

10. A nucleic acid probe comprising a complementary polynuclotide of the nucleic acid probe of claim 9.

11. An assay system for diagnosing patient response to anti-estrogen therapy for recurring breast cancer, comprising a set of marker genes or nucleic acid probe as defined in any of claims 1-10.

12. The assay system of claim11, wherein said marker genes are disposed on an assay surface.

13. The assay system of claim 11, wherein said nucleic acid probe is disposed on an assay surface.

14. The assay system of claim 11, wherein the assay surface comprises an assay chip, array, or fluidity card.

15. An assay system for diagnosing patient response to anti-estrogen therapy for recurring breast cancer, comprising binding ligands that specifically detect polypeptide encoded by each of the respective marker genes of any of claims 1-7.

16. The assay system of claim 15, wherein the binding ligands comprise an antibody or binding fragment thereof.

17. A method for predicting outcome of anti-estrogen therapy for recurring breast cancer, the method comprising:

a. analyzing a patient's primary tumor tissue for expression of a set of marker genes as defined in any of claims 1-7; and
b. correlating a Cluster 1 expression pattern of the marker genes in the primary tumor with a prediction of Progressive Disease; and

c. correlating a Cluster 2 expression pattern of the marker genes in the primary tumor with a prediction of Objective Response to anti-estrogen therapy.

18. A method for predicting Progression Free Survival of anti-estrogen therapy for recurring breast cancer, the method comprising:

a. analyzing a patient's primary tumor tissue for expression of a set of marker genes as defined in any of claims 1-7; and

b. correlating a Cluster 1 expression pattern of the marker genes in the primary tumor with a prediction of lack of progression free survival; and

c. correlating a Cluster 2 expression pattern of the marker genes in the primary tumor with a prediction of positive progressin free survial.